



Northern Rhodesia.

Department of Agriculture

ANNUAL REPORT

for the year

1942

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Northern Rhodesia.

DEPARTMENT OF AGRICULTURE.

Annual Report for the Year 1942.

In accordance with instructions this report is presented in abridged form. The issue of Agricultural Statistics forms to European farmers has been suspended during the war period. Reliable figures of the quantities of the more important crops produced for sale by farmers are, however, available from other sources.

AGRICULTURE IN THE TERRITORY.

1. In the Railway Belt the season was again a poor one with difficult planting conditions (which reduced acreage, particularly of native maize crops), long droughts and early cessation of effective rain. Maize suffered much more heavily than kaffir corn. Elsewhere crops were normal or above normal in most areas, though something approaching famine conditions occurred in the Guimbe Valley where little rain fell.

Maize : Railway Belt.

2. Production of maize again fell far short of our requirements though it showed a slight increase on the 1941 figure.

MAIZE PRODUCTION FOR SALE.

(Thousands of Bags.)

Year	European	Native	Total
1941	120	38	158
1942	146	51	197

Total production by European farmers was approximately 200,000 bags, with an estimated average yield of slightly over 5 bags per acre. The figure of 51,000 bags of native maize sold does not take into account quantities sold in inter-village trade. These cannot be estimated but are known to have been much larger than is usual as there were a number of less favoured areas which had to purchase their requirements from the remainder. In particular the Guimbe Valley made heavy demands on the plateau. Commercial consumption of maize was approximately 440,000 bags but showed a slight tendency to decline toward the end of the year, irrespective of the economies secured through rationing and the use of alternative foodstuffs. There was a carry-over of 38,000 bags from the previous year and 210,000 bags were imported.

Wheat.

3. In spite of reduced water supplies the wheat crop was again above normal. Approximately 13,500 bags were sold at 26s. 6d. per bag.

Groundnuts and Beans.

4. Groundnut production for sale was again negligible but the bean crop was a good one. In the main native maize producing area groundnuts are unlikely to become popular except as the first crop on newly broken land. They have to be planted early in the season when the main concern is to get the maize crop established. Beans are planted much later and do not, or rather should not, compete with maize. Unfortunately the persistent but ill-judged optimism of the native cultivator induces him to go on planting maize long after any reasonable hope remains that the crop will mature. If he would substitute beans for this excessively late planted maize he would not only obtain something for sale but would vastly improve the succeeding maize crop, for the rotational benefit of beans is indeed remarkable in the average native garden. In the hope of encouraging this substitution representations have been made that the price of beans, which has remained constant for many years, should be increased.

Potatoes.

5. High prices have led to increased planting of potatoes both as a main crop and under irrigation. Where potatoes are grown at the expense of maize and wheat the tendency to increased production is not altogether desirable at the present time though it would have been welcome enough before the war.

Tobacco : Eastern Area.

6. A severe drought in the earlier part of the season adversely affected the crop but in the end both quality and quantity were better than had been expected, though there was a high proportion of inferior leaf. Some 2,370,000 lbs. of flue-cured leaf were sold, nearly 300,000 lbs. more than in 1941. The over-all price was 13.15 pence per lb. Non-quota tobacco fetched an average of 10.7 pence and quota tobacco 17.9 pence at the auction sales.

Tobacco : Western Area.

7. As in the Eastern Area the season started badly but improved later. Some exceptionally high yields were obtained. Total production exceeded 300,000 lbs., a record for this area. The bulk of the crop sold well but a small quantity of scrap and low grade tobacco remains on hand. Turkish tobacco was also grown on a small scale.

Rubber.

8. Immediately after the fall of Malaya enquiries were made into the possibility of obtaining rubber from indigenous *Landolphia* and allied genera. An interim report on methods of extraction of *Landolphia* rubber was published in early May for the guidance of District Officers and, after some delay while the matter of price was being decided by the British Ministry of Supply, a pamphlet on the purchase and handling of native rubber was published in July. All rubber obtained is now consigned to this department at Mazabuka and is there purchased on behalf of the Ministry of Supply in accordance with the following scale of prices :

TAPPED RUBBER.				BARK RUBBER.			
Grade		Price per lb.		Grade		Price per lb.	
		s. d.				s. d.	
T.1.	...	1	6	B.1.	...	1	3
T.2.	...	1	3	B.2.	...	1	0
T.3.	...		9	B.3.	...		8

By the end of the year some 7½ short tons had been received, mostly of the lower Bark Rubber grades, but quality was tending to improve.

Locusts.

9. Little locust activity was reported during the earlier part of the year but in September, October and November a large number of Red Locust (*Nomadacris septemfasciata*) swarms were observed. A southerly migration from the Congo began in September and swept the extreme western portion of the Territory, while in October a westerly movement occurred across the railway belt. No reports of egg-laying or of damage to crops were received.

Food Production Committee.

10. On the 12th January a Second Food Production Committee was appointed under my chairmanship with the object of increasing production of certain foodstuffs, notably of cereals, in the railway belt. The Committee submitted an Interim Report on the 23rd January containing the following major recommendations :

- (1) That an immediate appeal be made to all railway-belt farmers to increase their maize and wheat production to the maximum.
- (2) That a minimum price of 11s. per bag for maize crops harvested in 1943, 1944 and 1945 and 24s. for the 1942, 1943 and 1944 wheat crops be guaranteed.
- (3) That steps be taken to insure that production be not held up through lack of farm labour.
- (4) That a Standing Committee be appointed to administer a loan scheme for the benefit of producers unable to obtain financial assistance from other sources.
- (5) That powers be vested in the Standing Committee to enable idle land, implements and stock to be turned to the best use.

All these recommendations were accepted by Government and were promptly acted upon. The guaranteed minimum price for maize was later increased to 12s. and the price of the 1942 wheat crop was raised to 26s. 6d.

11. The action taken undoubtedly had a most stimulating effect. The breaking of new land began at once and, though this was hindered by the early end of the rains, considerable progress was made and was continued in the following rainy season. Labour and fertilizer supply problems were largely mastered and the limiting factor has resolved itself into supply of implements. This matter still presents serious difficulties and is being dealt with by the Department of Civil Supplies of which the Director is a member of the Standing Food Production Committee. It is impossible to predict the effect of the campaign on the 1943 maize crop as the planting season was again a particularly difficult one. There is no doubt, however, that the foundations have been laid for greatly increased production.

THE WORK OF THE DEPARTMENT.

12. An additional Agricultural Officer was appointed during the year but invalidings reduced the number of Agricultural Supervisors by two. The actual European establishment at the end of the year was :

- Director,
- Assistant Director,
- Ecologist,
- 9 Agricultural Officers,
- 5 Agricultural Supervisors,
- 3 Clerks (1 part-time).

13. Two Agricultural Officers were detailed for full time work among European farmers in the railway belt. Their main task was to assist in the food production campaign. In the rush period following His Excellency's appeal for the breaking of new lands these officers were constantly on tour collecting information, distributing conscripted labour and issuing mattocks and shovels where these were urgently needed. During the course of the year almost every farm from Choma to Broken Hill was visited at least twice. Pending the arrival of an Irrigation Engineer advice on dams was given and surveys of irrigation lands and furrows were completed on 28 farms. The visits also stimulated interest in soil conservation and during the year 28 miles of contour ridges were constructed on peg lines marked by the Agricultural Officers. These ridges protected 1,780 acres of cultivated land on 14 farms. The work is proceeding and increasing.

14. Tobacco planters in the Eastern Province showed renewed interest in soil conservation and, in response to the appeal for increased food production, in irrigation works. Eight miles of contour ridges and 9,000 yards of main irrigation furrows were laid out departmentally on private estates.

15. As usual, building formed one of the extra-departmental duties. The year's programme included European quarters at Katete, a cottage at Minga, a dispensary near Kanchomba and a temporary dispensary at Monze.

16. Forestry continued to be administered as a sub-department. The year's work is briefly reviewed in Part II of this report.

17. The Report of the Ecological Survey of North-Eastern Rhodesia was completed and is now in the press.

Reclamation and Preservation of Native Areas.

(a) SOUTHERN PROVINCE.

18. In spite of labour difficulties and occasional tool shortages the conservation of the main native maize producing area proceeded with satisfactory rapidity. This is illustrated in the following table :

Year		<i>Acres of cultivated land protected</i>	<i>Miles of contour ridge constructed</i>	<i>Miles of grass strips demarcated</i>
1940 ...	...	3,700	64	18
1941 ...	...	9,100*	146	50
1942 ...	...	11,800	253	18
TOTALS	...	24,600	463	86

* This figure was given, in error, as 12,100 in the 1941 report.

The area given as 'protected' refers to gardens only. A vastly larger area of the countryside benefitted from the works which, in addition to the construction of contour ridges, included the demarcation of land into appropriate arable and grazing areas.

19. The soil conservation works were constructed almost entirely by hand labour and costs rose considerably during the year to an average of 2.6 pence per yard of completed ridge. The cost per acre of protected land naturally depends on the topography which governs the amount of construction necessary. It varied between 5s. and 11s. per acre. To effect economies and to hasten progress it had been intended to employ two tractor ridging units, but unfortunately it proved impossible to obtain more than one tractor and little subsidiary equipment before the end of the year.

20. It seems desirable to re-emphasise the fact that protection is but one phase in the reclamation of these maize areas. The second is the building up and maintenance of fertility on the land protected—a very much slower process as will be seen from succeeding paragraphs. Ideally the two should proceed at equal pace but, here, if the pace of the former were retarded to that of the latter large areas of cultivated land would be eroded to the point of unproductivity before they could be given attention. We have no option, therefore, but to proceed with all reasonable speed in the protection of the land in the hope that improvement in agricultural practice will follow in time to prevent the waste of our labours.

21. The most needed improvements in agricultural method are :

(1) *The Use of Manure.* In this matter a good deal of progress has been made. Natives are now alive to the value of manure and little is deliberately wasted. Unfortunately not nearly enough is made. Simple methods of kraal-compost making have been demonstrated but as yet there has been little response. The native still fails to realize that labour expended on increasing his supplies of manure by making compost will materially reduce total expenditure of labour per bag of maize harvested. The only alternative to the general adoption of compost-making is adequate green manuring, a practice which is unlikely to be taken up voluntarily.

(2) *Timely Planting and Better Planting Methods.* With our short planting season the importance of timely sowing cannot be over-emphasized. The trouble is not so much failure to start early enough but that, due to the insensate urge to get in as large a maize acreage as possible, planting is too prolonged. Reference to this point has already been made in paragraph 4 of this report. The prevailing practice of dropping maize seed into the bottom of the furrow and ploughing it in is certainly economical of effort but it results in waste of seed and, unless conditions are almost ideal, in very poor stands. During the last two difficult seasons it is hardly too much to say that the potential yield of native maize has been halved by the prevalent planting practice. Dibbling in the seed in lines or on the side of the plough furrow is more laborious but by improving the stand again results in less expenditure of labour per bag. The improved methods have been demonstrated but they have not yet been imitated on any appreciable scale.

(3) *Adequate Weeding.* At the beginning of the 1942-43 season the Plateau Tonga Native Authority issued an order compelling adequate weeding of cultivated lands. This resulted in some improvement but it does not solve the most serious problem—the control of doubt grass (*Cynodon dactylon*). This weed has gained a firm hold on large areas of garden and its eradication with the implements available to the native cultivator seems almost impossible. It appears probable that the worst infested lands will ultimately have to be abandoned in the hope that a long bush fallow will gradually reduce this grass.

(4) *Rotation.* The rotation advocated for the maize area is one in which a quarter of the land is cropped with legumes. It is not ideal but it was felt that natives would never sacrifice more than a quarter of their maize acreage. Unfortunately experience has shown they will not readily sacrifice any. There is at present no enthusiasm for systematic rotation although the need has been repeatedly proved by the fact that in native gardens maize following beans yields as well as or better than that receiving a fairly liberal dressing of manure. During the last few years the price of maize has risen steadily but that of beans has remained constant. Restoration of the former price relationship may lead to increased planting of beans from which increased maize yields would assuredly follow.

22. To sum up, there can be no doubt that if each family unit in this area restricted their arable operations to 8 acres of land, of which 6 would be under cereals and 2 under beans, if they made and applied kraal-compost, if they practised dibbling of seed and kept their crops reasonably clean, the countryside would be transformed. There would be less land under so-called cultivation and this

would permit of better selection of garden sites. Annual production of maize *for sale* would rarely fall below 150,000 bags and in good years would exceed 300,000 bags. It is also known that almost every family unit could adopt the new and more intensive system of farming if they were determined to do so.

23. Supplementary departmental activities in this area during the year included the making of 33 miles of road, some dams and the experimental construction of wooden harrows which could be made and kept in repair by village carpenters. These harrows proved very satisfactory except on badly stumped land where breaking of teeth was too frequent. Two sets of solid wooden wheels with iron tyres were made and fitted to Scotch carts mounted on old car axles. They had stood up well to four months' constant work by the end of the year.

(b) EASTERN PROVINCE.

24. In the Eastern Province the method of approach to soil preservation is the dilution of population in the intensely congested Reserves by planned settlement of the newly purchased areas, followed by soil conservation works in the Reserves themselves.

25. The main work of the year consisted of the actual movement of a large population into the new areas and preparation for a similar movement in 1943. The rate of reconnaissance survey was therefore unavoidably reduced. Some 400 miles of sample traverse were made in Petauke district and 530 square miles of country were mapped from these traverses.

26. Preparation for future movement involved the sub-division of large areas into potential village blocks by blazed or cut lines and beacon points, the construction of roads and, in some instances, provision of water supplies.

27. About 450 miles of demarcation lines were blazed or cut and 120 miles of road constructed, additional to the roads made by the Water Development Department. The cost of road-making was partly borne by Native Treasury funds. Considerable attention was devoted to the important problem of constructing cheap but reasonably permanent all-weather roads which would not become starting points of erosion. The supplementary water programme, undertaken with assistance from the Water Development Department, consisted of the construction of 12 wells and 8 dams.

28. Movement of population started early in the year. The first step was to tour the areas with headman and elders of the villages concerned and to allocate the demarcated village blocks as far as possible in accordance with the wishes of the people. Most of this work was done by Mr. Fraser, whose intimate knowledge of the people and district fitted him for the task. Each village block was then visited by the Agricultural Officer or Supervisor in charge of the area, the land for cultivation was selected by the people and the lay-out decided upon. Alternate cultivation and protection strips were then laid off on the contour with road tracers and pegged. The people then constructed small marker ridges joining the pegs so as to give a clear and continuous definition of the ten-yard protection strips (now generally known as 'tenyardi') and the streamside protection areas. After that they were at liberty to make their gardens in the normal way with no restriction other than the avoidance of the non-cultivation areas, but they were encouraged to make up the lower margins of the 'tenyardi' into effective ridges. By this means a total length of about 500 miles of contour strip (representing some 9,000 acres of cultivation) was laid off and marked, often under the most difficult conditions.

29. Some attention was also given to village improvement. In co-operation with the people sites were selected, villages planned and the position of each hut marked before building began. The building of better and more spacious huts was encouraged as far as popular prejudice would allow. On the whole this work was fairly successful and the majority of the villages in the new areas show a marked, if limited, improvement on those in the Reserves. As a lead towards further improvement a demonstration village of 40 huts was built in kimberley brick near the new agricultural station at Katete.

30. The total population transferred to the new areas during the year was 140 villages comprising 16,054 inhabitants. This is additional to the 16 villages (2,000 inhabitants) moved last year.

31. In the Reserves themselves the local mound-system of cultivation, the extremely heavy run-off and the acute land shortage preclude the adoption of soil conservation works of the type which has proved successful in the Southern Province. Large scale observation works were laid down last year and were extended to protect 800 acres. From these trials it appears probable that the soil conservation method best suited for immediate adoption is the replacement of the cultivation mounds by ridges running with the contour, in conjunction with substantial banks at fairly wide intervals which will act as guides for the cultivation ridges and as safeguards against extensive damage from breaks.

32. Contour cultivation on ridges is now general and compulsory over much of Nyasaland. To pave the way for its introduction here, most of the Angoni and Achewa Chiefs and Councillors were conducted over part of the Lilongwe district where they met and had full discussion with the local Native Authorities. This expedition was made possible by the courtesy of the District Commissioner and the staff of the Agricultural Department at Lilongwe. In addition, demonstrations have been laid down and a large number of individual cultivators have been persuaded to adopt the method.

33. As a further step, the lands in the Reserves vacated by villages which have moved to the new areas are being contour marked, the marks indicating the sites for the main banks. These vacated lands are now very extensive and it is hoped to ensure that contour ridge cultivation will be adopted on them when they are re-occupied by the balance of the Reserve population.

34. To deal with bush fires a Board has been set up on which the African population is represented by the Paramount Chiefs Mpezeni and Undi and it is proposed to introduce and gradually to enforce early burning throughout the Province. This is especially necessary in the new areas where, happily, the problem is considerably simplified. The division of land into village blocks makes it comparatively easy to apportion responsibility for late fires and a Native Authority Order makes it obligatory on Headmen to enforce early burning within their areas.

35. A vigorous fruit-tree planting campaign has been carried out with the co-operation of the Native Authorities, more especially in the new areas. Nurseries have been established at agricultural stations, main camps and other convenient points. Seeds and many thousands of seedlings have been distributed and almost every village in the new areas now has its young orchard of rough citrus, mango, paw-paw, banana and guava.

(c) NORTHERN PROVINCE.

36. In this Province continuous touring in the cause of food production prevented any extension of soil conservation work, in fact, relaxation of intensive supervision led to some slight deterioration in the attitude to *chitemene* control which is now in operation over a large area in Abercorn and Isoka districts. Nevertheless the beneficial results of rotational tree-logging and of protection from devastating late fires by 'early burning' are now becoming so apparent that, with resumption of normal supervision, there is little doubt that harmony will be restored and that the number of malcontents will shrink to its former insignificant proportion.

Cash Crops.

37. At the present time the native has little difficulty in selling everything he can produce surplus to his own requirements, but long before this temporary improvement in economic status occurred as a result of the war, the department was trying to build up cotton and tobacco growing industries to provide much needed cash crops in the Eastern Province. While the primary *raison d'être* has, for the time being, been removed, these projects have been continued for the sake of the indirect benefits indicated later and to provide a possible basis for the improvement of post-war economic conditions in suitable areas. The Native Development Board finances the purchase, handling and transport of the crops and receives the revenue from sales.

(a) *Burley Tobacco.*

38. This is grown under departmental supervision round Minga (Petauke District). Drought at the time of planting reduced yields but better picking and handling resulted in improved quality. 250 growers produced a total of 42,000 lbs. of leaf which was purchased at an average price of 3½d. per lb. The average grower received a return of £2 9s. from a plot of less than half an acre. Inadequate accommodation for grading, storage and baling caused difficulties and a portion of the crop became slightly mouldy though not unsaleable. In spite of this receipts from sales showed a small profit after all expenses had been deducted.

39. The value of this small industry should not be estimated merely in terms of cash return to the growers for it can be and is being used as a means to general agricultural improvement. New food crops have been successfully introduced in the area and the change-over from mound to contour ridge cultivation promises to be a comparatively easy step for the people are used to making such ridges for their tobacco. In general they show a willingness to adopt new crops and methods and to co-operate wholeheartedly in controlled movement to new land which contrasts refreshingly with the general attitude elsewhere. This must be borne in mind when the expansion of the industry is being considered. So far it has been kept small, indeed it would have been foolish to do otherwise when all resources have to be concentrated on the re-settlement programme but, post-war marketing conditions permitting, the industry is capable of very considerable expansion especially as large areas of suitable soil should come into cultivation within the next two years.

(b) *Cotton.*

40. Cotton production is confined to the Marambo area of the Luangwa Valley and has nothing like the same possibilities for expansion, in fact it is unlikely to develop to true commercial proportions. Nevertheless it is unquestionably of benefit, both directly and indirectly, to the small, poor Akunda tribe among whom a suggestion that cotton growing should be discontinued met with unexpectedly strong opposition. The season was a particularly good one and the average yield of seed cotton was estimated at between 600 and 700 lbs. per acre. 365 growers produced a total of 91,000 lbs. of seed cotton which was purchased at ¾d. per lb. Lint, in the quantities at present produced, finds a ready market within the territory among Europeans and Africans for domestic purposes and is also used as a cleaning material on the mines. The existence of the cotton organisation and roads system enabled 12 tons of rice to be bought in the Valley; a small beginning but one capable of considerable expansion. Improved rice seed was imported from Nyasaland and distributed towards the end of the year.

Agricultural Education.

41. Model maize gardens were cultivated under departmental supervision at 23 schools in the Southern Province. Some were remarkably good, others fair and some indifferent. Success depended largely on the keenness and personality of the head teachers, but at some schools lack of equipment caused difficulties. In the Eastern Province model maize gardens, excellent in themselves, were cultivated at the Achewa and Angoni Native Authority schools. In contrast to the position in the Southern Province, however, these two school gardens have so far exercised no external influence whatever, not even on the private gardens of the teachers of the schools concerned. It is hoped that time and the continued realization of good crops will change the present Eastern Province attitude to both demonstration and school gardens—that they are something exotic and have no bearing on normal practice—for sooner or later the methods taught will have to be adopted generally if the Province is to maintain its population. In the Northern Province the agricultural training of future teachers was continued at Senga Hill School. There are already a number of good school gardens in this Province.

Food Production in Native Areas.

42. Following a recommendation of the Second Food Production Committee that an effort should be made to render "outside areas" self supporting in order to check the drain on food supplies from the railway belt, a conference was held in February at which it was agreed to intensify propaganda for larger gardens and to purchase all surplus foodstuffs offered at buying stations to be opened for this purpose. Similar action was unnecessary and even undesirable in the native areas bordering the railway where subsistence agriculture has long given place to production for sale, where increased

production will come not from larger but from better managed gardens and where buying stations already existed. In the Northern Province the new opportunities for sale of produce afforded by buying centres, together with an intensive propaganda campaign, produced immediate results in the form of a small surplus of miscellaneous foodstuffs for export to the railway line, in addition to a substantial contribution to the feeding of the large labour gangs employed on road work in the Province. The results which will accrue in subsequent years are likely to be even more important. The greater part of the time of the Northern Province agricultural staff was devoted to this campaign and to the organisation of food buying. Similar action was taken in the Eastern Province where the department built and supervised five of the eight buying stations. This Province also succeeded in sending to the railway belt a small surplus over local requirements of foodstuffs.

PART II.—FORESTRY.

43. It is estimated that all but one-third of the total area of Northern Rhodesia is covered by tree growth. The department can deal directly only with a very small proportion of this vast forest area of over 190,000 square miles. Its activities are concentrated in the two areas of greatest economic importance—the settled portion of the Railway Belt and the Mukusi (*Baikiaea plurijuga*) forests of the south-western corner of the territory. Throughout most of the rest of the country the department can only act in an advisory capacity to Administrative and other departments.

44. One of the two Assistant Conservators was seconded throughout the year to the Northern Rhodesia Chamber of Mines for work on the utilization of native timber in the mining industry. A Forester, assisted by a part-time Forester, was in charge of the Southern Division. An Assistant Conservator and a Forester controlled the Northern Division. This skeleton staff had to cope with greatly increased demands for forest produce resulting from the war. Development work and the training of African staff suffered somewhat in consequence.

Demarcation of Forest Reserves.

45. The introduction of the new Forests Ordinance involved the cancellation of all Forest Reserves and their re-proclamation. In doing this minor amendments were made to some reserves. Re-gazetting had not been completed by the end of the year and there are some new areas which will be proclaimed Reserves when time permits.

At the end of the year there were 13 Forest Reserves covering 236 square miles. All but one lay in the Northern Division. The Southern Division has, however, some 500 square miles of exploitable *Baikiaea* forests which are fairly adequately protected by Native Authority Orders. It is hoped in time to give these areas more formal status under the new Forests Ordinance.

Industries and Exploitation.

(a) FROM CROWN LAND.

46. There was a marked increase in the sales of all types of forest produce, although the year only marked the start of the era in which the copper mines will, as a result of the depletion of the timber resources on their own land holdings, have to draw more and more extensively on Crown Lands for their requirements of saw-timber. A total of 260,000 cubic feet of timber was cut under licence on Crown Lands, of which 175,000 cubic feet were taken for mining purposes. Of the latter figure, however, 75,000 cubic feet represented mining timber and poles exported to Kipushi Mine in the Belgian Congo. The balance of 100,000 cubic feet was consumed by Nchanga and Roan Antelope Copper Mines. The former obtained approximately half of its supplies from Crown Lands in 1942 but the latter only began to cut on Crown Lands towards the close of the year. Poles cut under licence totalled 24,000 of which more than 14,000 were used on Broken Hill Mine. Sales of firewood amounted to 32,000 cords, 9,500 of these being taken for mining purposes.

47. Free issues of forest produce mainly for Government and military purposes, also showed striking increases. In the railway belt 115,000 poles were cut on Crown Lands for construction of evacuee and army camps and other Government temporary buildings. Further large quantities were cut in out-districts where no accurate records were kept. From Forest Reserves 50,000 bamboos and nearly 2,000 cords of firewood were supplied for similar purposes.

48. The Rhodesia Wood Industries produced some 5,400 cubic feet of plywood, 4,600 cubic feet of veneer and 650 cubic feet of staves at Livingstone.

(b) BAROTSE FORESTS: ZAMBESI SAW MILLS.

49. This company worked at full pressure throughout the year and employed an average of 112 Europeans and 3,950 Africans. Some 12,600 acres were exploited in Sikubingwa and Simungoma Forests (Sesheke District) yielding approximately 220 cubic feet of *Baikiaea* timber per acre. In addition the Company exploited a large area of open woodland from which they extracted 10,000 cubic feet of Mukwa (*Pterocarpus angolensis*) and an aggregate of 11,000 cubic feet of Mungongo (*Ricinodendron rautanenii*), Muzauli (*Copaifera coleosperma*), Musheshi (*Burkea africanum*) and Mutuya (*Brachystegia spiciformis*). The total volume of timber in the round extracted by the Company was 3,141,000 cubic feet. The output of sawn timber was:

				Cubic feet
Rhodesia Railway Sleepers	...	...	...	566,000
South African Railway Sleepers	...	...	...	94,000
Other timbers sold...	...	...	...	459,000
Total	...	...	...	1,119,000

From the Company's operations in Sesheke District the Barotse Forest Fund received a gross revenue of £5,530.

Imports and Exports.

50. Details of imports and exports are regarded as confidential and cannot be published during the war.

Legislation.

51. The Forests Ordinance, 1941, came into operation on the 1st October, 1942. The Forest Licence Regulations, published simultaneously, govern the issue of licences and the charges for forest produce.

DIVISIONAL OPERATIONS: SOUTHERN DIVISION.

52. The main work in this division is the control of the exploitation of the *Baikiaea* forests and the fire protection of these forests, both exploited and unexploited.

Fire Protection.

53. Some 485 square miles of *Baikiaea* forest were protected by internal and external fire-guards and constant patrolling. The forests in Sesheke District are controlled under the Barotse Forest Laws and here, thanks to the good work of the Forest Indunas, only one small fire occurred, this being caused deliberately. In Livingstone District the position is somewhat different. This district contains the exceedingly vulnerable Yeta's forests which were exploited a few years ago, and the danger is aggravated by the presence near the forests of the Mulobezi Mill with its high concentration of population. Three large fires occurred in these forests, one started by sparks from an engine and the others by native honey-hunters. One of the latter fires was serious and caused irreparable damage to some 5 square miles of Situmpa Forest before it could be extinguished. Three square miles of Katombora Forest, which lies to the south, were also burned out by honey-hunters.

Management and Surveys.

54. In Livingstone District preliminary surveys of Katombora, Livingstone North and Malavwe Forests were undertaken preparatory to their proclamation as Forest Reserves. In Sesheke District the stock map of the forests under exploitation was kept up to date and reconnaissances were carried out in areas to be exploited in future years.

DIVISIONAL OPERATIONS: NORTHERN DIVISION.

55. The increased quantity of timber and poles cut during 1942 for mining purposes and for military and other special war-time needs was the principal feature of the year. Interest extended however, to a wide range of forest products including such hitherto neglected items as wild rubber and bark-fibre rope.

Management and Surveys.

56. With the approaching exhaustion of large-sized timber on their own properties, the mining companies of the Copperbelt showed keen interest in the supplies still available on the more readily accessible of the Crown Lands. Extensive reconnaissance to locate all exploitable areas was carried out on behalf of Government by the Chamber of Mines. The Assistant Conservator seconded to the Chamber made an aerial reconnaissance in September and organised the ground survey. Five parties were in the field from October to December and some 1,200 square miles of country were covered. The data were plotted on a new 1-50,000 plan of the region prepared by the Survey Department of Mufulira Mine. Enumeration surveys of the forested areas will be started in 1943.

Fire Protection.

57. Routine early burning was carried out in all Forest Reserves and in all areas exploited under departmental control. The few late fires which occurred were of little consequence as the damage was localised by the previous burning.

Research.

58. All silvicultural and planting experiments were maintained but no extension was possible. Of the trial plots of *Pinus spp.* in Ndola Forest Reserve, *P. patula* and *P. insularis* have made the most rapid growth, but the stems of the latter are of poor form. The following data were recorded from the two oldest plots of these species after a thinning carried out during the year:

Species.	Age.	Average Height.	Average diameter at breast-height.
<i>P. patula</i> ...	5 years 10 months	24 ft.	4.2 ins.
<i>P. insularis</i> ...	4 years 11 months	22 ft.	3.5 ins.

59. The Assistant Conservator seconded to the Chamber of Mines carried out a wide range of experiments and investigations into the properties of local timbers used for mining purposes. Mechanical tests on the eleven most common species were undertaken at the Timber Research Laboratory of the Transvaal Chamber of Mines. Large scale seasoning tests and experiments on the rates and types of decay of timber underground and of the prevention of borer attack during seasoning were laid down. A start was also made with work on the distillation of local woods. The results obtained so far from the above investigations have been circulated privately by the Chamber of Mines and it is hoped that when the work has been completed full publication will be possible. The Assistant Conservator compiled a small handbook on "Native Timber" for the use of officials and employees handling timber on the copper mines.

MAZABUKA,
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C. J. LEWIN,
Director of Agriculture.